

“Uranium Mining in Virginia”

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There Isn't Any!

- Where is it?
 - Australia: has the most
 - Canada: highest grade ore
 - South Africa, Niger, Namibia, and Brazil among locations where large deposits may be found
 - United States has ~3-4%, producing ~4.3% of world's supply, despite operating about 25% of the world's commercial power reactors

Marline Company

- 1970s
- Falling demand
- Chernobyl
- Three Mile Island

Moratorium by General Assembly

- Current moratorium in effect since 1982
- Virginia Uranium Mining received state permit to conduct exploratory drilling
- Test drilling began in December, 2007(?)
- VA Tech. study

Need for Energy

- World generation of electricity expected to increase by 60% between now and 2030
- World nuclear reactors inventory
 - 440 in operation
 - 29 under construction
 - 30 on order
 - 320 proposed

YELLOW CAKE INVENTORY

Annual World production is 108M lbs.

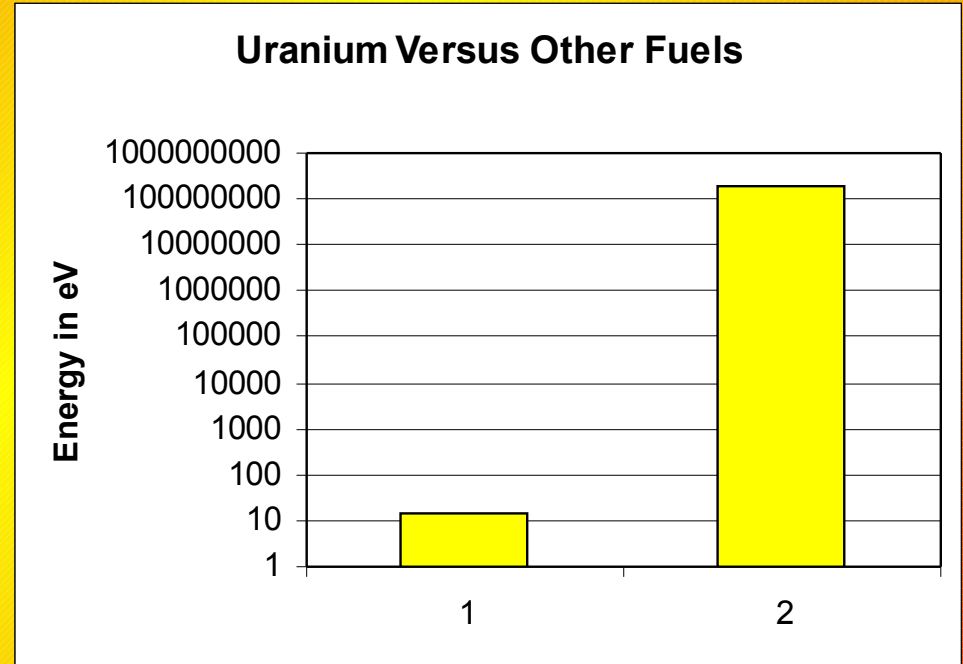
- In 2007 ~178M lbs. consumed
- US consumption is ~60M lbs. annually
- US Mines produced <5M lbs in 2006
- >50% Uranium from other countries

“Green” Energy / Nuclear

- In order to reduce the emission of CO and CO₂ nuclear energy is seen to be an obvious choice for maximizing the production of energy in a “green” manner.

Energy per Atom

- 1 = coal, oil, and gas
15 eV per atom
- 2 = Uranium 235:
200 Million eV per
thermal fission of
one atom



U.S. Nuclear Energy Versus France

- The U.S. is producing only about 20% of its energy from nuclear, contrasted to 80% energy production from nuclear in France.
- However, the U.S. is producing more nuclear energy than is France.
- A consideration is the feasibility and cost of reprocessing spent fuel.

Exploration Activities

1. Time span by permit
2. Locating sites
3. Drilling
4. Restoration to original configuration
5. Future exploration

Nature of Uranium deposit in Pittsylvania County

- See VUI slides for details; the Uranium is held in Granitic rock; leaching is not feasible; underground mining is not preferred.

Extent and Value of Uranium deposit in Pittsylvania County

- Est. 110M lbs. Uranium lie underground
 - Valued at ~\$8 - 10 Billion

Method of Mining:

1. Open pit (near the surface)
2. In-situ Leaching (ISL)
3. Underground (for deeper reserves)

Protection During Mining:

- Public
 - Primary concern is safety and radiation exposure
 - Natural uranium ore is about as radioactive as granite
 - Other byproducts (radium, radon) managed safely and strictly regulated
- Workers
 - Strict regulations govern safety and protection of workers
- Environment
 - Sites are restored and revegetated
 - For ISL mining, only soil surface disturbance is bore hole drilling, groundwater is cleanly restored and site returned to its original condition

Characterization of Area at Present

1. Soil
2. Surface Water
3. Subsurface Water, including wells
4. Residences and Buildings (Radon)
5. Present State Guidelines on Drinking Water

Exploration Phase Protection

- Workers' dosimetry program (whole body and Rn)
- “Environment”

Milling Operations

- Where
- In type of buildings
- Disposal of tailings
- Shipment of Yellow Cake

Post mining / milling restoration

- Refer to slides in the VUI presentation, which show cross sections of modern storage pits, which utilize impervious materials for longevity.
- Valuable lessons have been learned since the early days of Uranium mining in the West. We have learned not to leave open tailings deposits for long periods of time where they may be spread by rain and winds. Instead, they will be located in these modern storage pits.